Abstracts

Simulation of resonant modes of rectangular DR in MIC environment using MPIE-MoM with combined entire-domain and sub-domain basis functions

Yaxun Liu, S. Safavi-Naeini, S.K. Chaudhuri and R. Sabry. "Simulation of resonant modes of rectangular DR in MIC environment using MPIE-MoM with combined entire-domain and sub-domain basis functions." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 1901-1904 vol.3.

An efficient method-of-moments volume integral formulation using combined entire-domain and subdomain basis functions is proposed for simulating the resonant modes of a rectangular DR in an MIC environment. The formulation is based on the mixed-potential integral equation using Michalski's formulation-C Green's functions. The spatial-domain Green's functions are calculated by using the complex image method. Different from the simple sinusoidal entire-domain basis functions used by previous methods, an approximate solution for the resonant modes of rectangular DR in MIC environment based on Marcatili's method is used as the entire-domain basis function, while a set of tetrahedral basis functions are used as sub-domain basis functions. Since the main profile of the resonant mode can be represented well by the entire-domain basis function, only a small number of sub-domain basis functions are needed for further refinement of the representation. Compared with the method-of-moments formulations using only sub-domain or entire-domain basis functions, this method is much faster for the same accuracy. Numerical results are given and compared with other methods.

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